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N. A. C. A. BULLETIN

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IN TWO SECTIONS

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EDITORIAL DEPARTMENT NOTE

At a meeting of the National Board of Directors of the N. A. C. A. in October, 1931, the many complicated phases of the present period of business readjustment were being discussed. It was pointed out that the wholesale and retail prices of most commodities had been pretty thoroughly deflated, and that inventories of raw materials and finished goods had been greatly decreased all along the line. It was suggested that wages had not been reduced in proportion to the general drop in commodity values. In other words, the general opinion prevailed that prosperity probably would not come from "around the corner" until wages were liquidated in conformity with the general reduction in other values. Mr. Eric A. Camman, National Director of Research, had a decidedly different view of the situation. He admitted that the general wage rate has not been greatly reduced but he injected an idea into the discussion which provided food for thought when he pointed out the fact that the number of employees and their working hours per week have been drastically reduced in most industries, which has, of course, resulted in a greatly decreased total income to the wage earning group as a whole. Mr. Camman suggested that a survey might be made through our Research Department in an effort to determine roughly just to what extent total wages have been reduced in conformity with the reductions in general values.

In this issue of our Bulletin we are presenting the results of this survey. Since the information here presented was secured from our members, acknowledgment is hereby made of our appreciation of their hearty cooperation in this undertaking and we believe that they as well as others will find some interesting information in the following pages.

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FEBRUARY 1, 1932

ARE INDUSTRIAL WAGES DEFLATED IN PROPORTION TO GENERAL DROP IN VALUES?

Results of a Survey Made Under the Direction of Mr. Eric A. Camman, National Director of Research of the N. A. C. A.

IN THE belief that a study of wage liquidation would be both interesting and valuable, the following inquiry was sent on October 10, 1931, through the Department of Research of the N. A. C. A., to members of the Association who were considered to be in a position to supply the information suggested:

"One of the statements frequently heard in these perplexing times is that wages must be liquidated in conformity with the general drop in values. The obvious implication is that wages have not so far been liquidated to the extent necessary. What is the situation in this respect? Is further liquidation imperative, or have we in fact already reduced wages more than is generally believed?

"An inquiry is being conducted through the Department of Research to obtain from the members of the Association some timely information on this question. We have in our membership a fair cross section of American industry. Hence, with the cooperation of each member, we should be able to collect and publish, for the benefit of all, data pertinent to this important question.

You are asked to send in to the Department of Research the following data:

1. *Wage Level.* What is the percentage of average hourly earnings of employees in September, 1931, to the earnings in September, 1929?
2. *Number of Employees.* Give number of employees at end of last pay week in September, 1931, and corresponding number in September, 1929.
3. *Average Employment.* What was the average number of hours per week worked per employee in the last week in September, 1929? Last week in September, 1931?

"No confidential information is requested; for example, wage rates are not asked to be disclosed. Moreover, it is not necessary to indicate the name of the company furnishing the information.

The Department relies upon the members for the substantial correctness of the figures."

It was further requested that the information be classified as follows:

Industry.

Classification. Subdivide employees into groups according to trade or occupation, in what you consider the most logical breakdown. The object is to obtain significant group totals by classes. Show as many classes as you think desirable. Avoid, if possible, putting dissimilar occupations in a group.

Wage Level. Specify percentage of average hourly earnings, i.e., pay-rate, in effect last week in September, 1931, to corresponding earnings in 1929.

Number of Employees. Employees at end of last pay week in September, 1929, and September, 1931.

Average Employees. Total employee hours worked, divided by number of employees for the last week in September, 1929, and September, 1931.

The response was especially gratifying. Some three hundred replies were received, and they were so carefully made that it was possible in the final compilation to use 246 of them, covering 156,915 employees in September, 1929, and 101,161 in September, 1931.

It was not possible, however, to use the data given under the classification heading as defined above, as there was too great a lack of uniformity in classifying into groups.

Schedule I shows a tabulation of the information received by major industry groups. The column headings are largely self-explanatory. The figures in columns 2 and 3 were taken directly from the reports. The figures in the other columns were obtained by calculation after giving weight to the number of employees involved. In no respect are any of the figures shown "averages of averages." From this schedule the following are the facts for all of the reporting companies as a whole:

1. Wage rates were reduced 5.6% (col. 4).
2. Working hours per week fell off 20.9% (col. 5).
3. Rate of income of those employed in 1931 fell off 25.3 (col. 6).
4. Number of people employed decreased 29.8% (col. 7).

5. Total of wages paid by the reporting companies decreased 47.5% (col. 8).

The facts for each group may be read similarly.

Schedule I-a shows a subdivision of groups 11, 13 and 14 on Schedule I in sub-groups where a sufficient number of concerns or of employees appeared in the sub-groups to give representative figures.

Schedule II repeats the information given in Schedule I by major geographical districts.

Schedule III summarizes the information by States and major geographical districts.

Schedule IV shows employment and group income by wage level groups.

If wages and costs of living are always in the same proportion it does not make any difference to wage earners, as far as current living conditions are concerned, what their wage level is. Of course, this does not apply to those whose income depends on fixed interest bearing sources such as bonds, mortgages, annuities, etc. However, when major changes in wage levels and cost of living do occur, there never is any uniformity, with the result that more groups are injured than benefited, and consequently, dissatisfaction and unrest develop.

There has been a general feeling that wages have not been decreased in proportion to the cost of living and other factors. Technically, this is correct, and is borne out by the following statistics taken from data in the "Survey of Current Business" published by the Department of Commerce.

	Decrease in Percent in Sept., 1931 from Sept., 1929
Wage Rate N. A. C. A. Survey	5.6
Industrial Production	37.8
Wholesale Prices—550 Commodities	29.1
Wholesale Prices—Farm Products	43.1
Wholesale Prices—Foods	29.3
Wholesale Prices—except Farm and Food	22.5
Wholesale Prices—Raw Materials	36.7
Dun's Wholesale Price Index	29.0
Bradstreet's Wholesale Price Index	34.7

	Decrease in Percent in Sept., 1931 from Sept., 1929 Group Payrolls
Cost of Living—All Groups	15.0
Food	25.7
Housing	12.5
Clothing	20.4
Fuel and Light	3.2
Sundries	3.0
Farm Prices—Weighted by quantities marketed	49.0

A comparison such as given above, with no other data, leads to an erroneous conclusion that wages have not been deflated in proportion to cost of living. Taking into consideration, however, the shorter working week, together with the reduction in wages, it is seen (column 6 in all tabulations) that those who are working in the plants included in this survey were receiving 25.3% less weekly wage in September, 1931 than they were in September, 1929.

But, in order to get the full effect of decrease in income, it is necessary to take into consideration the fewer number of people receiving income from these plants, and column 8 of all tabulations shows the decrease in total wages paid by the 246 companies included in this survey. The figures in this column show that those dependent on these companies for their livelihood received 47.5% less income in September, 1931 than they did in September, 1929.

If it is reasonable to assume that the decrease of 49% in the weighted index of farm prices fairly measures the decrease in income of the average farmer, then it may be stated that industrial wages are not far out of line as compared with agricultural incomes.

This survey only covers 246 plants with 156,915 employees in September, 1929. Possibly only those plants which were better managed than the average replied to the inquiry, although this point may not have any bearing on whether the plants included reduced wages more or less than those who did not reply. Figures published by the Federal Reserve Board, which include companies with 6,600,000 employees in 1927, estimated to be 78% of all industrial employees in the United States, show a payroll decrease of 46.7% from September, 1929 to September, 1931, as compared with the N. A. C. A. figures of 47.5%. Therefore, the N. A. C. A. figures may be accepted as reasonably accurate.

Of course, there is a wide divergence between lines. If the average income received by farmers and industrial workers as a class may be considered to be between 45 and 50% less than in September, 1929, then the following lines may be considered as not yet proportionately deflated.

	Percent Decrease in Group Income
Food	15.0
Printing	22.6
Paper	25.9
Leather Products	33.4
Stone, Clay, Glass	7.7
Chemicals	27.0
Rubber Products	38.4

and the following have had to bear too heavy a burden

Machinery	62.9
Forest Products	57.8
Transportation	54.6
Non-Ferrous Metals	54.8

Of the above list, all figures check very closely with the Federal Reserve Board figures, except the Cement, Stone, Clay, Glass Group, which they show to have a decrease of 49.5%. Therefore, it is fair to infer that the eight companies reporting in the N. A. C. A. inquiry have taken the suggestions offered by the members of the N. A. C. A. in their employ and applied them so intelligently that they have been able to maintain wage payments 90% more effectively than the others in the group who did not have such an advantage.

Schedule I-a, which gives some supporting figures for certain groups, shows some wide divergences. The Forging group represented has done very well, while the Agricultural Implement, Foundry, and Machine Tool groups have suffered. In making subdivisions of what is at best a small number in a group, there is always danger of a distortion because of abnormal situations; therefore, these figures should be used with care.

For those interested in a geographical distribution of the groups given in Schedule I, Schedule II is presented. Here, again, care must be exercised in reading the figures, as the number of companies

in each sub-group is necessarily quite small and external factors may cause distortion in some items.

For ease in making comparisons of Group Payrolls by geographical districts, Schedule II-a is offered for what it is worth. Without detailed information, which is not available, the variances cannot be explained.

There is quite a difference in various states as shown on Schedule III. New England has had the reputation of suffering less from the depression than other manufacturing districts, and this is borne out by the figures, although not to the extent which one might believe. If the figures which are available are indicative of average conditions, Hawaii, Kentucky, California, and Indiana have the most favorable conditions for their wage earners in the order named.

One of the theories which has been advanced is that if wages were reduced, costs would go down, goods would be sold, production would increase, and the wage earner would get more than enough work to compensate for his loss of income. Schedule IV gives some data on this subject and discloses some interesting relationships. Columns 2 and 3 show that the median wage cut is in the 90%—94% level. In that group the working hours in September, 1931, as compared with September, 1929 were 79.8% and the number employed 66.1%. Every group which received a larger rate of cut worked a smaller percentage of hours and every group but one which had a smaller rate of cut worked a greater percentage of hours, and the single exception was but a little smaller. The difference in working time of those whose rate was cut 10% or less and those whose rate was cut more than 10% is very marked. Therefore, the income level of those who had greater rate decreases suffered much more than in proportion to the decrease.

Also, those companies who decreased wages the most, had to lay off the most men, so that instead of wage cuts stimulating business, the contrary condition seems to have obtained and the group payroll figures are most startling in their import. Where wages were cut to 75% or less, payrolls were only 29.2%. Where wages were increased to between 105% and 109%, payrolls were 68.8%. It would be an interesting and valuable contribution to

economics if more data along this line could be developed over a period of time. It is doubtful if the data presented here on this point are conclusive, as they are not as complete as would be desired, and an insufficient period of time is covered to indicate conclusively the relationship between cause and effect. It certainly is true that at the present time the low group payrolls shown are the result of poor business and that there may not have been a sufficient time or the proper accompanying conditions for low payrolls to result in low costs which would stimulate sales.

A comparison between the income of industrial wage earners as a group and farm income has been made. A few others are available for the same period.

	Number of Employers Percent	*Group Payrolls Percent*
N.A.C.A. Survey Factory Employment	70.2	52.5
Federal Reserve Board Factory Employment	70.8	55.3
Bituminous Mining	82.6	54.4
Anthracite Mining	78.6	62.7
Power, Light and Water	89.8	88.6
Telephone and Telegraph	82.9	91.9
Retail Trade	88.8	84.2
Federal Employees in Washington	119.0	

It appears, therefore, that factory workers have already had a decrease in employment and a reduction in group income comparable with agriculturalists and greater than any other group listed above, with the possible exception of bituminous miners. Statistics on employment and payrolls of railroads are not available, but it is doubtful if they compare with those for factory workers.

In the month of November factory payrolls decreased about 5% more. Mining payrolls increased, as would be expected due to seasonal trends, utility payrolls decreased about 1.5% and retail employment increased nearly 2%.

In this analysis emphasis has been placed on total payrolls rather than on rates, as they indicate the income available for groups of individuals and in times of depression the volume of money available to be put in circulation by groups as a whole is of more economic significance than individual rates.

SCHEDULE I

Wages, Income and Employment in Major Industries in 16 States as Reported Sept., 1931, Compared with Sept., 1929

	Industry Group	1 Number of Companies Reporting	2 Number of Employees 1929	3 Number of Employees 1931	4 Wage Level Percent 1931 of 1929	5 Relative Working Hours Percent 1931 of 1929	6 Income Level Percent 1931 of 1929	7 Number Employed Percent 1931 of 1929	8 Group Payrolls Percent 1931 of 1929
1	Food and kindred products	14	4,286	4,060	100.8	91.8	92.5	94.7	85.0
2	Textile and other products	13	6,153	5,199	91.6	75.8	69.4	84.5	58.6
3	Forest products	12	4,002	2,558	91.1	72.4	66.0	63.9	42.2
4	Paper and paper products	16	2,934	2,446	95.9	92.8	89.0	83.4	74.1
5	Printing, publishing and allied industries	15	4,249	3,854	93.9	90.8	85.3	90.7	77.4
6	Chemical and allied products	10	9,890	7,817	100.0	92.4	92.4	79.0	73.0
7	Products of petroleum and coal	1	3,110	2,684	103.0	90.2	92.9	86.3	80.1
8	Rubber products	6	6,337	4,633	95.4	88.3	84.2	73.1	61.6
9	Leather and its manufactures	4	5,503	5,050	88.4	82.1	72.6	91.8	66.6
10	Stone, clay and glass products	8	3,196	3,170	95.4	97.5	93.0	99.2	92.3
11	Iron, steel and their products, not including machinery	42	37,784	26,796	92.9	74.1	68.8	70.9	48.8
12	Non-ferrous metals and their products	8	9,819	6,313	92.4	76.1	70.3	64.3	45.2
13	Machinery, not including transportation equipment	64	43,564	24,280	93.6	71.2	66.6	55.7	37.1
14	Transportation equipment, air, land and water	14	9,927	6,330	96.2	73.9	71.1	63.8	45.4
15	Miscellaneous	19	6,161	4,971	97.2	91.9	89.3	80.7	72.0
	Totals	246	156,915	110,161	94.4	79.1	74.7	70.2	52.5

For further sub-division see Schedule Ia.

SCHEDULE Ia

Wages, Income and Employment
Sub-division of Certain Industries Listed on Schedule I
Sept., 1931, Compared with Sept., 1929

	Industry Group	1 Number of Companies Reporting	2 Number of Employees 1929	3 Number of Employees 1931	4 Wage Level Percent 1931 of 1929	5 Relative Working Hours Percent 1931 of 1929	6 Income Level Percent 1931 of 1929	7 Number Employed Percent 1931 of 1929	8 Group Payrolls Percent 1931 of 1929
11	Iron, Steel and Their Products, not Including Machinery:								
	Cutlery and large tools, not including silver and plated cutlery	3	1,505	1,237	97.6	74.2	72.4	82.2	59.5
	Hardware not elsewhere classified	5	4,764	3,679	95.6	73.4	70.2	77.2	54.1
	Iron and steel	3	1,187	575	85.5	76.4	65.3	48.4	31.6
	Forgings, iron and steel not made in steel or rolling mills	4	5,593	4,858	96.8	95.5	92.4	86.9	80.2
	Iron and steel processed	5	4,824	3,338	88.5	56.4	49.9	69.2	34.5
	Structural and ornamental iron and steel not made in rolling mills	7	12,947	8,453	90.5	75.5	68.3	65.3	45.7
13	Machinery, not Including Transportation Equipment:								
	Agricultural Implements	3	3,623	758	90.6	84.2	76.3	20.9	16.0
	Electrical Machinery, Apparatus and Supplies	13	7,938	5,306	91.5	83.1	76.0	66.8	50.7
	Foundry and Machine Shop Supplies	15	5,160	2,629	86.0	56.1	48.2	50.9	24.5
	Machinery	17	13,048	6,905	98.2	65.2	64.0	52.9	33.9
	Machine Tools	7	2,641	968	83.6	71.7	59.9	36.7	22.0
14	Transportation Equipment:								
	Locomotives	3	841	439	99.1	79.1	78.4	52.2	40.9
	Motor Vehicles, Bodies, Parts	8	8,127	5,302	94.3	70.9	66.9	65.2	43.6

SCHEDULE II

Wages, Income and Employment in Major Industries by State Groups
Sub-division of Data Shown in Schedule I
Sept., 1931, Compared with Sept., 1929

I. NEW ENGLAND STATES

States Included: Massachusetts, Connecticut, Rhode Island

	Industry Group	1 Number of Companies Reporting	2 Number of Employees 1929	3 Number of Employees 1931	4 Wage Level Percent 1931 of 1929	5 Relative Working Hours Percent 1931 of 1929	6 Income Level Percent 1931 of 1929	7 Number Employed Percent 1931 of 1929	8 Group Payrolls Percent 1931 of 1929
1	Food and kindred products	1	209	153	79.4	128.6	102.1	73.2	74.7
2	Textile and other products	7	2,963	2,277	96.4	83.7	80.7	76.8	59.1
3	Forest products	1	218	174	88.0	69.2	60.9	79.8	48.6
4	Paper and paper products	9	1,647	1,196	95.9	92.9	89.1	72.6	64.7
5	Printing, publishing and allied industries	2	696	585	83.2	82.6	68.7	84.1	57.8
6	Chemical and allied products	2	1,560	1,634	95.5	93.9	89.7	104.7	93.9
8	Rubber products	3	3,493	2,539	92.0	90.0	82.8	72.7	60.3
9	Leather and its manufactures	2	639	593	94.0	82.0	77.1	92.8	71.6
10	Stone, clay and glass products	1	244	161	102.3	97.0	99.2	66.0	66.1
11	Iron, steel and their products, not including machinery	12	8,770	6,750	95.0	76.3	72.5	77.0	55.8
12	Non-ferrous metals and their products	5	9,280	5,975	92.5	76.3	70.6	64.4	45.4
13	Machinery, not including transportation equipment	10	4,955	3,030	89.8	78.6	70.6	61.2	43.2
15	Miscellaneous	3	907	660	92.2	75.6	69.7	72.8	50.7
	Total	58	35,581	25,727	93.3	81.0	75.6	72.3	54.7

II. MIDDLE ATLANTIC STATES

States Included: Pennsylvania, New Jersey and New York, not including New York City

1	Food and kindred products	6	1,148	1,330	98.3	95.4	93.8	115.9	108.6
2	Textile and other products	2	1,958	1,802	97.8	53.2	52.0	92.0	47.9
3	Forest products	4	1,683	1,041	88.9	74.7	66.4	61.9	41.1
4	Paper and paper products	3	250	275	96.1	102.1	98.1	110.0	107.9
5	Printing, publishing and allied industries	8	2,504	2,325	94.3	89.6	84.5	92.9	78.5
6	Chemical and allied products	4	1,847	805	87.3	83.7	73.1	43.6	31.9

7	Products of petroleum and coal	1	3,110	2,684	103.0	90.2	92.9	86.3	80.2
8	Rubber products	1	369	216	86.4	79.9	69.0	59.5	41.1
10	Stone, clay and glass products	4	1,687	1,893	94.4	98.8	93.3	112.2	104.8
11	Iron, steel and their products, not including machinery	14	6,905	3,835	90.3	61.3	55.4	55.5	30.8
13	Machinery, not including transportation equipment	17	7,733	4,475	96.1	78.7	75.6	57.9	43.8
14	Transportation equipment, air, land and water	6	3,614	2,651	94.0	79.2	74.4	73.4	54.6
15	Miscellaneous	6	1,113	1,026	91.9	89.9	82.6	92.2	76.2
	Total	76	33,921	24,358	94.8	79.1	75.0	71.8	53.8

III. EAST NORTH-CENTRAL STATES

States Included: Wisconsin, Michigan, Illinois, Indiana, Ohio

1	Food and kindred products	4	608	554	94.5	91.2	86.2	91.1	78.5
2	Textile and other products	2	532	420	83.2	80.5	67.0	78.9	52.9
3	Forest products	5	1,880	1,174	93.4	66.3	61.9	62.4	38.6
4	Paper and paper products	3	827	805	95.1	94.2	89.6	97.3	87.2
5	Printing, publishing and allied industries	1	48	52	102.4	100.0	102.4	108.3	110.8
6	Chemical and allied products	4	6,483	5,378	103.3	93.4	96.5	83.0	80.1
8	Rubber products	1	1,845	1,098	106.0	88.0	93.3	59.5	55.5
9	Leather and its manufactures	2	4,864	4,457	87.7	82.1	72.0	91.6	66.0
10	Stone, clay and glass products	3	1,265	1,116	96.2	95.5	91.9	88.2	81.0
11	Iron, steel and their products, not including machinery	13	20,977	15,339	92.9	76.1	70.7	73.1	51.7
12	Non-ferrous metals and their products	3	535	338	90.8	70.6	64.1	62.7	40.2
13	Machinery, not including transportation equipment	34	26,924	15,173	94.0	66.2	62.2	56.4	35.1
14	Transportation equipment, air, land and water	6	3,217	2,041	100.6	66.1	66.5	63.4	42.1
15	Miscellaneous	6	1,582	1,590	94.8	92.8	88.0	100.4	88.3
	Total	87	71,592	49,535	94.6	76.2	72.1	69.2	49.9

IV. EAST SOUTH-CENTRAL STATES

States Included: Kentucky

5	Printing, publishing and allied industries	1	636	561	100.0	98.3	98.3	88.2	86.6
11	Iron, steel and their products, not including machinery	2	205	206	105.8	86.5	91.5	100.5	92.0
	Total	3	841	767	101.6	95.0	96.5	91.2	88.0

SCHEDULE II (*Continued*)

Wages, Income and Employment in Major Industries by State Groups
Sub-division of Data Shown in Schedule I
Sept., 1931, Compared with Sept., 1929

V. WEST NORTH-CENTRAL STATES

States Included: Minnesota, Wisconsin

	Industry Group	1 Number of Companies Reporting	2 Number of Employees 1929	3 Number of Employees 1931	4 Wage Level Percent 1931 of 1929	5 Relative Working Hours Percent 1931 of 1929	6 Income Level Percent 1931 of 1929	7 Number Employed Percent 1931 of 1929	8 Group Payrolls Percent 1931 of 1929
1	Food and kindred products	1	1,250	832	114.2	84.2	96.2	66.6	64.1
2	Textiles and their products	2	700	700	65.0	100.0	65.0	100.0	65.0
4	Paper and paper products	1	210	170	100.0	72.0	72.0	81.0	58.3
5	Printing, publishing and allied industries	2	155	122	98.0	98.0	96.0	78.7	75.6
11	Iron, steel and their products	1	927	666	80.5	94.4	76.0	71.8	54.6
13	Machinery, not including transportation equipment	3	3,952	1,602	89.5	86.0	77.0	40.5	31.1
14	Transportation equipment, air, land and water	2	3,096	1,638	94.2	73.5	69.2	52.9	36.5
15	Miscellaneous	4	2,558	1,695	104.7	98.9	103.5	66.3	68.5
	Total	16	12,848	7,425	94.0	87.8	82.5	57.8	47.7

VI. PACIFIC STATES AND HAWAII

States Included: California, Hawaii

1	Food and kindred products	2	1,071	1,191	100.0	88.1	88.1	111.2	97.9
3	Forest products	2	221	169	84.5	78.9	66.7	76.5	51.0
5	Printing, publishing and allied industries	1	210	209	98.9	99.0	97.9	99.5	97.5
8	Rubber products	1	630	780	94.2	85.7	80.7	123.8	99.8
	Total	6	2,132	2,349	96.9	87.0	84.3	110.2	93.1
	Grand Total (Schedule I)	246	156,915	110,161	94.4	79.1	74.7	70.2	52.5

SCHEDULE IIa

Group Payrolls
Arranged by Geographical Districts

		New England	Middle Atlantic	East North Central	East South Central	West North Central	Pacific	Total
1	Food	74.7	108.6	78.5	...	64.1	97.9	85.0
2	Textile	59.1	47.9	52.9	...	65.0	...	58.6
3	Forest Products	48.6	41.1	38.6	...	...	51.0	42.2
4	Paper	64.7	107.9	87.2	...	58.3	...	74.1
5	Printing, Publishing	57.8	78.5	110.8	86.6	75.6	97.5	77.4
6	Chemical	93.9	31.9	80.1	92.0	...	...	73.0
7	Petroleum, Coal	...	80.2	...	...	...	...	80.1
8	Rubber	60.3	41.1	55.5	...	...	99.8	61.6
9	Leather	71.6	...	66.0	...	...	...	66.6
10	Stone, Clay, Glass	66.1	104.8	81.0	...	...	...	92.3
11	Iron and Steel	55.8	30.8	51.7	...	54.6	...	48.8
12	Non-Ferrous Metals	45.4	...	40.2	...	...	...	45.2
13	Machinery	43.2	43.8	35.1	...	31.1	...	37.1
14	Transportation Equipment	...	54.6	42.1	...	36.5	...	45.4
15	Miscellaneous	50.7	76.2	88.3	...	68.5	...	72.0
	Total	54.7	53.8	49.9	88.0	47.7	93.1	52.5

SCHEDULE III

Wages, Income and Employment in Certain States (16 States, Schedule I) Sept., 1931, Compared with Sept., 1929

Industry Group	1 Number of Companies Reporting	2 Number of Employees 1929	3 Number of Employees 1931	4 Wage Level Percent 1931 of 1929	5 Relative Working Hours Percent 1931 of 1929	6 Income Level Percent 1931 of 1929	7 Number Employed Percent 1931 of 1929	8 Group Payrolls Percent 1931 of 1929
I. New England:								
Massachusetts	26	9,175	6,860	94.0	85.8	80.7	74.8	60.5
Connecticut	26	23,060	16,474	92.8	78.0	72.4	71.4	51.6
Rhode Island	6	3,346	2,393	94.5	88.3	83.4	71.5	59.6
Total	58	35,581	25,727	93.3	81.0	75.6	72.3	54.7
II. Middle Atlantic:								
New York (not including New York City)	43	17,453	12,073	94.0	77.5	72.9	69.2	50.4
New Jersey	9	4,188	3,317	93.7	94.1	88.2	79.2	69.9
Pennsylvania	24	12,280	8,968	96.2	75.8	72.9	73.0	53.2
Total	76	33,921	24,358	94.8	79.1	75.0	71.8	53.8
III. East North Central:								
Wisconsin	14	11,854	8,307	92.2	68.8	63.4	70.1	45.5
Michigan	1	200	165	104.0	82.3	85.6	82.5	70.6
Illinois	28	15,270	11,101	93.8	79.2	74.3	72.3	53.8
Indiana	10	4,303	3,345	101.4	75.2	76.3	77.7	77.8
Ohio	34	39,965	26,617	94.8	77.5	73.5	66.6	49.0
Total	87	71,592	49,535	94.6	76.2	72.1	69.2	49.9
IV. East South Central:								
Kentucky	3	841	767	101.6	95.0	96.5	91.2	88.0
V. West North Central:								
Minnesota	4	3,369	1,394	78.4	92.6	72.6	41.4	30.0
Missouri	12	9,479	6,031	97.6	86.7	84.6	63.3	53.6
Total	16	12,848	7,425	94.0	87.8	82.5	57.8	47.7
VI. Pacific and Hawaii:								
California	3	851	949	92.5	84.4	78.1	111.5	87.0
Hawaii	3	1,281	1,400	99.8	92.2	92.0	109.3	100.7
Total	6	2,132	2,349	96.9	87.0	84.3	110.2	93.1
Grand Total	246	156,915	110,161	94.4	79.1	74.7	70.2	52.5

SCHEDULE IV

Wages, Income and Employment in 16 States (a) Arranged in Groups by Wage Level Sept., 1931, Compared with Sept., 1929

	Wage Level Group Percent Sept., 1931, of Sept., 1929	1 Number of Companies Reporting	2 Number of Employees 1929	3 Number of Employees 1931	4 Average Wage Level Percent 1931 of 1929	5 Relative Working Hours Percent 1931 of 1929	6 Income Level Percent 1931 of 1929	7 Number Employed Percent 1931 of 1929	8 Group Payrolls Percent 1931 of 1929
0	Below 75	...	4,349	2,650	64.6	74.5	48.1	60.9	29.2
1	75–79	...	4,911	3,147	76.3	65.8	50.2	64.1	32.1
2	80–84	...	8,383	5,004	83.3	73.5	61.2	60.0	36.7
3	85–89	...	21,558	14,983	88.1	74.4	65.5	69.5	45.5
4	90–94	...	49,492	32,677	91.7	79.8	73.2	66.1	48.4
5	95–99	...	16,191	12,141	95.9	81.6	78.3	75.0	58.7
6	100–104	...	41,748	32,013	101.2	81.8	82.8	76.7	63.6
7	105–109	...	4,844	3,584	107.2	86.8	93.0	74.0	68.8
8	110 and over	...	5,489	3,962	117.3	79.1	92.8	72.2	67.1
	Total	246	156,915	110,161	94.4	79.1	74.7	70.2	52.5

(a) States listed in Schedule I.

In the preparation of the tables required to be compiled from the replies to this inquiry, it was necessary to make quite a number of extensions and to tabulate the statistics in various arrangements. Although there are only 246 companies involved, about 1,000 separate returns had to be handled, because the inquiry requested the data sub-divided by classes of employees. Five extensions had to be made for each return, for each table. When the extensions were completed, tabulating cards were cut, and the data were sorted and tabulated seven or eight different ways.

We wish to acknowledge our appreciation of the helpful assistance voluntarily rendered in carrying through the task, by Miss F. Muriel Ranson, Inventory Specialist, Empire State Building, New York City, who assigned the comptometer operators from her organization for the calculations, and to the staff of the International Business Machines Corporation, 310 Fifth Avenue, New York City, which made the tabulations on its 80 column tabulating equipment under the direction of Mr. G. B. Heddendorf, Special Representative of the company.

INTER-RELATIONSHIPS OF WAGE INCENTIVES, STANDARD COSTS AND BUDGETARY CONTROL

By C. W. Walkley, Chief Accountant, Lapp Insulator Co., Leroy, N. Y.

Wage Incentives, Standard Costs and Budgetary Control have received a great deal of attention by writers and speakers on business subjects during recent years and much valuable material has been published. Necessarily, much of this material has treated these subjects from the standpoint of their installation and operation. In this paper an attempt will be made to present the subjects from the viewpoint of the major executives, or, in other words, on the basis of their effect upon net profit. The ultimate goal of all business is net profit. When suggestions are made to the major executives for changing systems or introducing new methods, their first question naturally is, "What will be the effect upon net profit?" The rapid increase in the use of these control methods in business

during the past few years indicates a markedly favorable effect upon net profit.

The extensive program of distributing information concerning the application and operation of these methods has resulted in a wide increase in their adoption. However, in many instances, this adoption has been directed to only a partial solution of the problems involved. There are many Wage Incentive plans in effect in plants which do not use Standard Costs nor Budgetary Control. There are Standard Cost plans which are used without Wage Incentives; and Budgetary Control is practiced without the related practices of Wage Incentives and Standard Costs. These isolated applications unquestionably represent a definite step forward in the attempt to secure a greater control over the results obtained in the operations of the business, but emphasis should be made of the fact that intelligent installation and coordination of the other two related methods would not only extend the control over factory operations, but would increase the value of the existing plan. G. Charter Harrison, in his book, "Standard Costs," stresses the importance of an effective Wage Incentive Plan as a basis for using Standard Costs.

The application of Wage Incentive Plans has been extensive in recent years. That the fundamental purpose of offering the workers an increase in pay for an increase in effort resulting in increased output is successful is evidenced by the large number of industrial engineering firms who make installations of Wage Incentive Plans as well as by the startling results reported by them.

A great majority of the Wage Incentive Plans in effect in industry are well adapted for the application of Standard Costs. The effect of all Wage Incentive Plans is to stabilize unit labor costs for each operation. In some plans the unit labor cost of an operation for a part is fixed when the standard is set. The employer does not benefit by savings on direct labor due to increased production, but is rewarded by a lower unit overhead expense when production exceeds the capacity of the department or plant which could be attained without a Wage Incentive Plan. In the operation of other Plans, the employer participates in the savings on direct labor due to increased production resulting in a declining unit labor cost of an operation as well as a declining unit overhead

expense. Under the first plan the unit direct labor cost is fixed when the standard for an operation on a part is set and varies from that fixed position only in cases where the workers fail to make the standard. Under the second plan the unit direct labor cost is stabilized when the standard for an operation on a part is set, with a tendency to decline as production by the workers increases, and will rise only when the workers fail to make standard production. With either of these two effects on the unit direct labor cost, and especially with the former, an ideal basis for Standard Costs is offered.

Standard Costs involve establishing norms or model figures based on past experience representing, in the judgment of the management, the cost at which each unit of product should be produced. The amounts by which the actual costs differ from these established estimates and the reasons for the differences are indicators of the weak places in the business or of incorrect estimates. In the majority of industries unit direct labor costs are much more difficult to stabilize than are either unit direct material costs or unit overhead costs. When unit direct labor costs are stabilized by an effective Wage Incentive Plan, those unit labor costs as determined by the standards set are the standard labor costs for those operations on those parts. This results in a standard direct labor cost for each operation on each part produced. By building up the operation costs for each part in a unit, a standard direct labor cost for the complete unit is obtained. The production for any period by units, multiplied by the standard direct labor cost of each unit, gives the total direct labor cost for the period at standard labor costs. The difference between this total at standard and the actual total for the period is accounted for regularly, which makes possible improvements in manufacturing methods or revision of standards.

The effect of this reliance on individual standard direct labor costs is to eliminate the need for detailed clerical accumulation of labor costs on product based on time spent on the product as reported on the time sheets. Wages are paid to the workers on a basis of quantities produced instead of time spent, therefore it is logical to interpret these wages based on quantities into labor cost per unit. Actual direct labor costs by departments are checked

against standard direct labor costs for each department based on its production so that the actual expenditures for departmental labor are always under control. As a matter of fact, there should be only a slight variance between these two totals.

As a result of a Wage Incentive Plan unit direct labor costs have become relatively fixed. Aside from the slight fluctuations due to varying rates of production by the workers, these unit direct labor costs will not change until the standards by which they are determined are changed. The use of these labor costs in Standard Costs eliminates the importance of a close watch on actual labor costs as determined by time spent on jobs. Quantities produced by departments now take first place in clerical records of production. This is of vital importance in industries which experience losses during the manufacturing process which are not due to faulty workmanship, and in which this loss ratio is more important in determining unit manufacturing cost than the direct labor and material combined. These records of production and losses are necessary in such industries in order to determine a normal loss ratio for each class of product which must be used in obtaining a final standard cost per good salable unit. They also bring to light products having excessive loss ratios and show the results of efforts to correct them.

The use of Standard Costs for direct materials in many instances is simpler than their use for direct labor because of the natural tendency for material prices to remain fairly constant. The results of this application are equally valuable because by the use of Standard Costs it is possible to secure data which show the variations from the established estimate of material costs, material used in production, and waste of material in production.

Many concerns use methods of cost estimating for individual groups of operations throughout their factory which represent essentially Standard Cost installations although not called by that name. Yet these concerns fail to realize the advantages of greater control of the results of operations and of putting clerical work where the greatest benefits will be obtained, which are derived from a general application of Standard Costs.

Standard Costs are closely linked with Budgetary Control. Their close relationship is especially marked in the consideration of

overhead expense. In the use of Standard Costs it is necessary to arrive at a standard rate of overhead for distribution to the product. The logical manner of determining this rate is to estimate the normal overhead expense of a production unit for a period and apply it over the anticipated production of that production unit. The operations of estimating the expense and the production of the unit for any period is called budgeting. By applying this expense to the production an expense rate per unit of product is obtained which is termed Standard Cost.

A complete Budgetary Control plan would include an advance estimate or budget of the results to be obtained during a given period from all activities of the business and of the costs of those results. The net effect of such a plan is to predict the net profit for the period in advance, and, if the results as shown by the estimate are not satisfactory, to enable the management to make advance attempts to improve them.

The advantages of Budgetary Control include that mentioned above—of offering an opportunity to anticipate unsatisfactory results of future operations and therefore take steps for their correction. Another benefit suggested is that a definite incentive is set up for foremen and department heads similar in effect to the incentive for the factory workers on Wage Incentives. Another advantage of a definite practical value is the fact that under a Budgetary Control Plan the estimated indirect expenses of a department are so fixed in relation to the anticipated production of that department and similarly for the business as a whole, that a profit will result. The foremen and other department heads are in close contact with the rate of production of their departments. The Budget Plan gives them a definite standard for their indirect expenses. It also gives the management a close control over the indirect expenses of the entire business. In a period of lessened production activity such as has been recently experienced and is still in effect in many industries, this one method of control may spell the difference between profit and loss for a business. It is an accepted fact that indirect expenses do not decline with declining rates of production activity unless strenuous efforts are applied.

A well prepared Budget Plan is an excellent basis for the development of an incentive plan for managers and executives. Many

and varied attempts have been made to place managers and executives on a profit sharing basis which will accurately reflect the individual's contribution to the net profit of the business and at the same time furnish incentive for each one to make a maximum effort at his job. Under a Budget Plan the results together with the cost of those results of each department are determined in advance. The degree with which the actual attainments of each department conform to the requirements of the budget determines the eligibility of that department head to participate in a bonus or profit distribution. It should be borne in mind that the accomplishment of results alone is not sufficient. The results must be attained at a cost which is in conformity with the expectations of the Budget Plan. The principle of such an incentive plan for managers and executives is essentially the same as the Wage Incentive Plan in the factory. An opportunity is offered to the heads of departments to put additional ability and effort into their work and thereby earn a reward. From their standpoint, as they increase their contribution to net profit their bonus increases and from the standpoint of the stockholders of the company, bonus payments represent recognition of additions to net profit and as such are a good investment on their part.

With the knowledge of results obtained from existing installations of these methods of control in the form of increased profits, it should be a decided reassurance to major executives in the face of increased competition, declining prices, and lack of orders to know that an intelligent and coordinated application of Wage Incentives, Standard Costs and Budgetary Control will make an important contribution to that ultimate goal of all business—net profit.